



Portland Harbor Development of Remedial Alternatives

Presentation to the
Portland Harbor TCT
May 13, 2015

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Presentation Objectives

Present technology assignment layers that will form the Alternatives to be presented in the Portland Harbor Feasibility Study.

Cap/Dredge

- Focus COCs
 - PCBs
 - PAHs
 - DDx
 - PeCDD
 - PeCDF
 - TCDD
- RALs
- Technology Assignment

Cap/Dredge – PCB RALs

Total PCBs			
ID	RAL ($\mu\text{g}/\text{kg}$)	Site-Wide	
		SWAC ($\mu\text{g}/\text{kg}$)	Acres Remediated
B	1,000	51	26
C	750	48	34
D	500	43	52
E	200	34	124
F	75	23	343
G	50	19	515

Cap/Dredge – PAH RALs

Total PAHs				
ID	RAL (µg/kg)	Site-Wide		
		SWAC (µg/kg)	Acres Remediated	
B	170,000	8,360	38	
C	130,000	7,140	48	
D	69,000	5,000	72	
E	35,000	3,800	99	
F	13,000	2,690	157	
G	5,400	1,780	286	

Cap/Dredge – DDx RALs

Total DDx						
ID	RAL (µg/kg)	RM7W		Site Wide		
		SWAC (µg/kg)	Acres Remediated	SWAC (µg/kg)	Acres Remediated	
B	650	100	10	21	11	
C	550	84	12	20	13	
D	450	64	15	19	16	
E	300	35	20	17	22	
F	160	21	24	15	33	
G	40	9	34	10	110	

Cap/Dredge – Dioxin/Furan RALs

Dioxins/Furans									
ID	2,3,4,7,8-PeCDF			1,2,3,7,8-PeCDD			2,3,7,8-TCDD		
	RALs (µg/kg)	SWAC (µg/kg)	Acres Rem	RALs (µg/kg)	SWAC (µg/kg)	Acres Rem	RALs (µg/kg)	SWAC (µg/kg)	Acres Rem
B	1	0.0031	3	0.003	0.00030	9	0.002	0.00034	7
C	1	0.0031	3	0.002	0.00028	16	0.002	0.00034	7
D	1	0.0031	3	0.0008	0.00025	43	0.002	0.00034	7
E	0.2	0.0020	5	0.0008	0.00025	43	0.0006	0.00024	31
F	0.2	0.0020	5	0.0008	0.00025	43	0.0006	0.00024	31
G	0.009	0.0011	27	0.0008	0.00025	43	0.0006	0.00024	31



SMA Technology Assignment

- RALs for focused COCs = SMA boundary
- Nearshore = 3' dredge/cap w/beach mix cover
- Nav/FMD = dredge w/sand cover
- GW plume = reactive cap
- All other areas = dredge w/sand cover or engineered cap (armoring in high shear)

Principle Threat Waste

High concentration

- 10^{-3} Increased Cancer Risk Threshold
- Preference for treatment

Highly mobile/unreliably contained threshold

- Based on mobility of naphthalene and chlorobenzene
- Evaluated using super cap design
- Preference for removal to maximum extent practicable

PTW - High Concentration

- Total PCBs > 200 ug/kg = 124 acres
- Total BaP Eq > 100,000 ug/kg = 5.4 acres
- Total DDx > 7000 ug/kg = 1.4 acres

PTW – Technology Assignment

- Unreliably contained (6.8 acres)
 - Dredge & ex-situ treatment
- Technology Assignment = cap
 - Reactive cap
 - Acres defined by RAL
- Technology Assignment = dredge
 - Dredge & ex-situ treatment
 - Acres defined by RAL
- Remaining Area
 - In-situ treatment = GAC

Benthic Risk

LWG

- CBRA
- Used lines-of-evidence
 - 1 endpoint @ L3
 - 2 endpoints @ L2
 - MQ=0.7
 - Pmax > 0.59
 - Removed risk from metals
 - Removed risk from TBT
 - TZW HQ > 100
 - Needed 2 or more adjacent samples
 - Piers, Nav channel, property boundaries used to cut off area

EPA

- Bioassay – L2 & L3
- LRM – pmax > 0.5

Benthic Risk – Technology Assignment

- $\text{Nav/FMD} = \text{Dredge}$
- Inside SMA = Technology Assignment (Dredge or Cap)
- Remainder = EMNR

Additional Areas Considered

- Swan Island Lagoon = EMNR
 - International Slip = EMNR
 - Others?
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- Remainder of study area = MNR